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FARMERS' BULLETIN 1195
UNITED STATES DEPARTMENT OF AGRICULTURE

RICE AS FOOD

RICE MAY BE MADE
INTO APPETIZING
DISHERS FOR ANY MEAL.
IT IS A GOOD BREAK
FAST FOOD AND AN
EXCELLENT BASIS FOR
SOUPS, SUBSTANTIAL
DISHERS, SALADS, AND
DESSERTS.



RICE is one of the most important of the cereals, a group of foods that form a large part of the diet the world over. In this country wheat is the great cereal staple, for we are a bread-eating nation, and rice is not a bread grain. The texture and the mild flavor of rice, however, make it excellent for serving or combining with other food materials of pronounced flavor, such as meat, eggs, cheese, and some fruits and vegetables. Like the other cereals, rice is comparatively cheap, and using it to supplement and extend the flavor of more expensive foods may be found an economical practice in many American households.

Contribution from the States Relations Service

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RICE AS FOOD.

Prepared by the Office of Home Economics.

CONTENTS.

	Page.		Page.
Milling rice for food-----	5	How to cook rice—Continued.	
Food value not indicated by commercial classes-----	6	Baked and stewed dishes-----	13
Food value of rice-----	7	Cakes and breads-----	16
Rice as a substitute for potatoes-----	8	Salads-----	18
How to cook rice-----	9	Desserts-----	19
Boiled rice-----	10	General hints on the uses of rice left-overs-----	20
Soups-----	12	Wild rice-----	21

RICE is more extensively grown and more widely used than any other foodstuff. This may surprise many Americans who do not realize that millions of people eat rice as regularly as Americans and Europeans eat bread. Rice is a palatable food when properly cooked, and it can be combined in many ways with more expensive and highly flavored foods into nutritious dishes. When potatoes are scarce and high in price, or when there is a shortage of wheat and other bread cereals, then rice is more extensively used; but under ordinary circumstances in many sections of this country it is neglected. In many households in certain sections of the South, however, it is used as often as potatoes are used in the North. In fact, in these regions a dinner would hardly be considered complete without rice served either as the starchy vegetable with meat or in one of the excellent combinations familiar in southern cookery.

Cereals of one kind or other are the staple of diet the world over because they are available almost everywhere, are comparatively cheap, and are nutritious and palatable. In Japan, parts of China and India, and other oriental countries rice is the mainstay because it is the most productive grain in the warm, humid parts of these countries, just as wheat is the most important food cereal in this country, Europe, and many other parts of the world. A shortage of the principal cereal used by a nation is more serious than a lack of any other food, as was shown by the wheat shortage in Europe during the World War and by the more recent so-called rice riots in Japan. Such shortage immediately affects those least able to bear it; the people with the lowest incomes are generally those most dependent on cereals.

In some parts of the Orient, where it is grown in large quantities, rice was and still is the medium of exchange. Debts, taxes, charities, various feudal obligations, pensions, even wages, were paid in rice. In China and Japan, for example, one of the earliest and most common institutions was the public-charity granary, where rice was received, sometimes as taxes, sometimes merely as gifts from the well-to-do or from the feudal lords, and stored as a community provision against times of famine. Rice plays an important part in the civil and religious rites and observances of many oriental countries. Moreover, necessity has taught the people in these densely populated rice-producing countries to use every part of their great

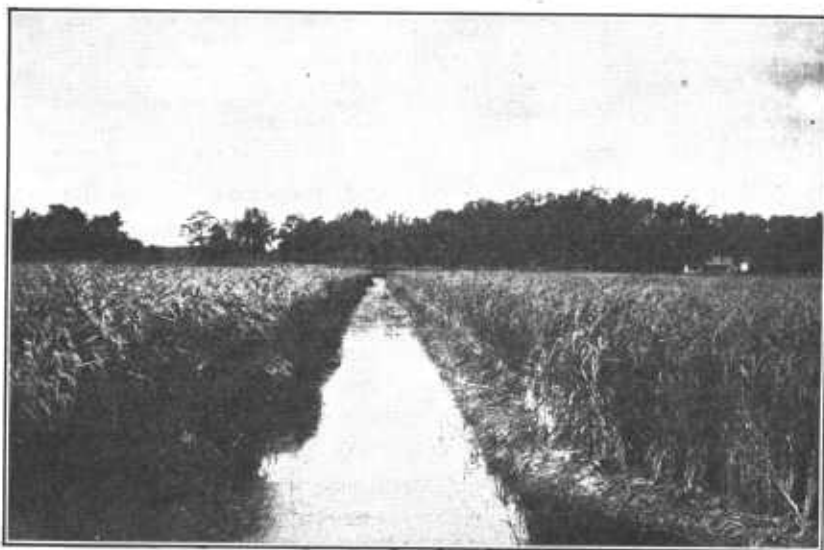


FIG. 1.—South Carolina rice field ready for harvest.

staple. Rice straw, for example, is used in China and Japan for making paper, matting, sandals, brooms, hats, and many other household and commercial articles.

Although the Orient produces about 97 per cent of the world's rice crop, the United States now grows more than enough to supply its own needs. Cultivation was begun in the Carolinas and Georgia in Colonial days and has now assumed commercial importance in Louisiana, Texas, Arkansas, and the Sacramento Valley in California, and there are scattering plantings in Mississippi, Florida, Alabama, and Missouri. The rice fields here are large, often several thousand acres in extent, and modern machinery much like that for seeding, harvesting, and thrashing wheat is used.

The varieties of rice grown in this country rank among the best of the world. Of the many tested here two varieties—Carolina Gold

and Carolina White—seem to be best adapted to the Atlantic coast fields; the Honduras and several Japanese varieties to Louisiana, Texas, and Arkansas; and the Japanese to California. The Honduras variety has long, narrow kernels, which, because of their length, are likely to be broken in milling. The Japanese varieties, which have short, round kernels, can be milled with less loss, an important point from the miller's standpoint. The Blue Rose variety is also a popular rice, with a kernel not so long as the Honduras and yet not so short as the Japanese varieties.

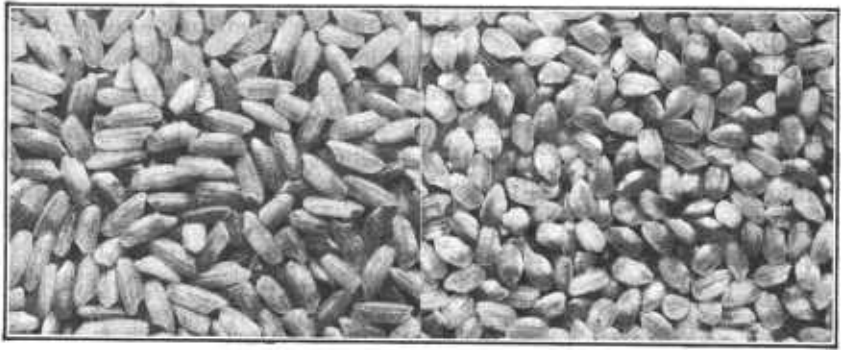


FIG. 2.—The two general types of rice now grown in the United States: A, Long grain; B, short grain. They are equal in food value and rank among the best rices of the world.

MILLING RICE FOR FOOD.

The grain, after it is thrashed, is known as rough rice, or paddy in oriental countries, and must be milled before it can be used as food. Rough rice consists of a tough, fibrous hull and a bran coat, inside of which are the germ and the main part of the grain, known as the endosperm in botany. Milling removes the hull, the bran layers, and the germ, leaving only the starchy endosperm. The primitive way of milling rice was to pound it by hand in a stone or wooden mortar with a pestle until the husk and cuticle cracked and rubbed off, and could be winnowed out, and this same principle is still used in oriental countries, though the power is usually applied in a more efficient way than by hand.

In this country more elaborate methods and more complicated machinery are used. The rough rice is first screened and fanned to remove particles of dirt, straw, and other foreign matter, and then passed between milling stones set just close enough together to break the hulls without crushing the grains. Fans blow out the light chaff, and a device known as the paddy machine separates out the grains that were not hulled the first time, so that they can be sent to other stones especially adjusted to hull the smaller grains.

At this stage the germ and outer skin still cling to the kernel. This is unpolished, or brown, rice and may be used as food without further milling. In order to give it a pearly luster, the rice is put through a series of machines that scour, polish, and in some cases coat it with glucose and talc. Bran and rice polish are the by-products of these milling processes which, although they rob rice of some of its most nutritious portions and much of its flavor, improve the keeping quality. Polished rice will keep almost indefinitely, while brown rice, because of the fat present in the germ and bran, is likely to become rancid, especially in warm weather.

The problem is very much the same as in milling other grains. For instance, the corn meal ground locally from the whole grain is richer and stronger flavored than the meal ground from kiln-dried corn from which the germ has been removed, but the latter keeps longer and is a better product for general marketing that involves long periods between milling and sale.

After milling, the rice passes through automatic machines which separate it according to size and weight and sack it ready for shipment.

In the process of milling about one-third of the weight of the rough rice becomes by-products, of which a little over half represents hulls and the remainder bran and polish. The hulls are worthless as food and are generally used as fuel in the mills or for packing material. They have also been used in the past by unscrupulous manufacturers as an adulterant of stock feeds. The bran is rich in fat, protein, and minerals, and when fresh and not adulterated with hulls makes excellent cattle feed and is regularly disposed of by millers for this purpose. It has been suggested that in times of food shortage rice polish might serve as human food, but as yet no very practicable methods of using it have been worked out.

FOOD VALUE NOT INDICATED BY COMMERCIAL CLASSES.

The classes of rice, or grades as they are sometimes incorrectly called, are based mainly on the percentage of unbroken grains or the size of the particles. These classes, then, have to do with appearance and commercial rather than food value, though there may be slight differences in chemical content. The housekeeper should remember in selecting a certain class of rice in preference to another that the price is no index to the amount of nourishment contained. In other words, it is often wise economy to buy the cheaper classes or kinds.

By means of carefully devised machines, milled rice is divided into three and sometimes four or five classes, consisting generally of head rice, second head, screenings, and brewers' rice.

Second-head rice consists in general of broken kernels approximately one-half and two-thirds the length of the perfect kernels, and sells for several cents a pound cheaper than head rice. When cooked it does not look so attractive as the unbroken kernels, but can be used to good advantage in combination dishes, soups, and the like, and offers a way of reducing one item in the family food bill without affecting the nutritive value.

Screenings is made up of pieces one-fourth and one-third the length of perfect kernels, and brewers' rice is broken in yet smaller pieces. Although screenings is likely to be pasty when cooked, it has practically the same food value as the more perfect kinds, and is equally good to use in soups and other dishes. Brewers' rice has commonly been considered too broken for table use, and as the name implies, has been disposed of chiefly to breweries. It is also an excellent feed for poultry and cattle.

FOOD VALUE OF RICE.

Rice is nutritious, easily digested, palatable, and a relatively cheap source of fuel for the body.

It is now generally agreed that the diet, as a whole, to be nutritious and palatable, must contain fuel in the form of protein, fat, starch, and sugar, mineral substances, fiber or so-called roughage, and finally the vitamins, recently discovered, but considered essential for health and development. There are now known to be at least three of these vitamins, which may, for the sake of brevity, be called A, B, and C. Whole milk and such of its products as contain butter fat and the leaf vegetables, such as spinach and lettuce, are believed to be rich sources of A; the portion near the germ of the cereal grains and all fruits and vegetables, of B; the juice of oranges, lemons, grapefruit, and of tomatoes, cabbage, and carrots, of C.

The rice grain before it is milled contains protein, fat, starch, sugar, mineral matter, fiber, and vitamin B, though they are not in the right proportion to meet the body needs. By removing the bran coat and the germ in milling, part of the protein, fat, and mineral matter and practically all the vitamin are lost, but the polished rice that remains is highly nutritious food, rich in starch and containing some protein and traces of fat and mineral matter. In fact, pound for pound, rice milled in the usual way contains about as much nourishment as highly milled wheat flour, the chief differences being that the wheat contains a little more protein and a trifle more fat and the rice more starch. Or, to put it even more broadly, the fuel value, commonly stated in calories, of rice, wheat flour, corn meal,

and in fact most of the cereals, is about the same; they each yield about 1,600 calories to the pound.

Rice is easily and thoroughly digested, and for this reason is often recommended as suitable for children and invalids. A series of experiments testing the digestibility of various kinds of raw starches carried on in this department has shown that rice starch is thoroughly assimilated even when raw, and that it is equal to wheat and corn-starch in this respect.

Much has been said in recent years about the relative food value of polished and unpolished rice, owing largely to nutrition experiments carried on in the Philippines, Japan, and other parts of the Orient. In the parts of these countries where rice is the most important cereal it has been found that a continuous and exclusive use of polished rice results in beriberi, one of the so-called deficiency diseases caused by lack of vitamine B. When the diet is varied and contains plenty of milk, fruits, and vegetables, as it generally does in this country, there is no lack of vitamine B, and consequently no objection to the use of polished rice, which contains nothing harmful in itself. Unpolished rice, however, many think, has a richer, better flavor, in addition to containing more of certain important nutrients; and if the demand should warrant, it could probably be successfully marketed like many other semiperishable products.

There has also been considerable discussion and misunderstanding as to just what is meant by the terms polished and coated rice and whether coating injures the food value. Polished rice has the bran, the germ, the gluten layer, and some of the outer layers of starch cells removed from it (p. 6) and may or may not be coated. The common practice in the rice mills in this country, however, is to coat polished rice with very small proportions of glucose and talc. The coating makes rice whiter and more lustrous, and, although it is a rather costly operation, millers and dealers believe that it pays. Since rice should be thoroughly washed through several waters before it is cooked, probably only very slight traces of coating remain. There is no evidence tending to show that coated rice, when properly washed and cooked, causes any digestive disturbances due to the small amount of coating left in the food. There is, therefore, no danger in using coated rice as a part of a mixed diet when the rice has been properly washed and cooked.

RICE AS A SUBSTITUTE FOR POTATOES.

When potatoes are scarce and high in price in the sections of the country where they are one of the staples of diet, rice is often served instead as the starchy vegetable accompanying meats, and makes an excellent and somewhat less expensive substitute. It is difficult

to determine just how much the saving is, because potatoes as purchased are about three-fourths water, and there is, of course, some waste in preparing them for cooking, while rice as purchased contains very little water, and is all edible. Moreover, during boiling, potatoes neither gain nor lose much in weight, but a fourth of a pound of dry rice absorbs enough water to become about a pound of cooked rice.

Rice and potatoes are not equivalent in food value, despite the fact that they both have a relatively large proportion of starch. Potatoes, unlike milled rice, contain in addition minerals and vitamins B and C. If the diet includes plenty of fruits and vegetables, however, the

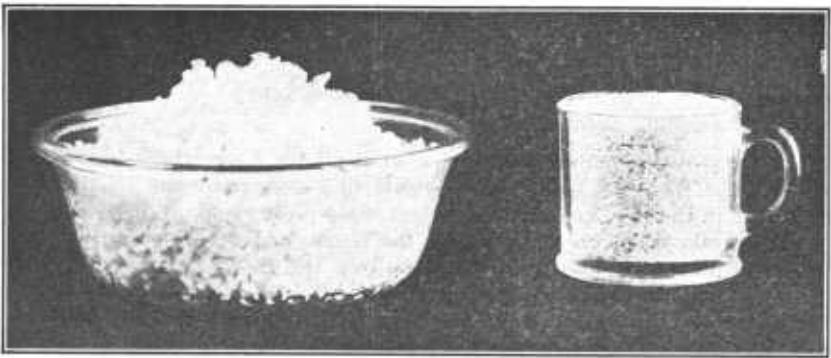


FIG. 3.—When cooked in 4 quarts of water a cup of rice more than triples in bulk and every grain remains separate.

use of rice instead of potatoes makes little difference from the standpoint of nutrition, because these needed substances are abundantly supplied by the other foods; but if the diet is so limited that potatoes are one of the few vegetables served, care must be taken to provide some other food that contains the substances lacking in milled rice.

HOW TO COOK RICE.

Methods of cooking rice vary considerably in different countries and even in different parts of the same country. In Japan, for instance, there are two common ways of boiling rice. In both cases the rice is washed until the water remains clear, and an iron or bronze kettle is generally used for cooking. For the first method, the washed rice is put into a relatively small amount of boiling water; for the second, it is put into cold water and gradually brought to a boil. When the steam and foam begin to escape from underneath the cover, the rice is considered cooked, but is allowed to stay in the covered kettle from one-half hour to an hour longer, while the steam makes

the grains swell and separate from each other. By the first method the cooked rice is drier and more flaky than by the second, though the difference is slight.

In this country, also, rice is boiled in several ways. No matter what method is used, it should first be thoroughly washed to remove all foreign substances and the loose starch, which if left is likely to make the rice grains stick together in a pasty mass when cooked. A good rule is to wash rice through several waters, or until the rinse water remains clear.

Southern cooks generally prefer to boil rice in a large quantity of water. Many use as much as 16 to 20 parts of water to 1 part of rice (4 or 5 quarts of water to 1 cup of rice).

BOILED RICE.

1 cup rice.

4 or 5 quarts boiling water.

1 teaspoon salt.

Wash the rice through several waters, until all the loose starch is removed, and drain it. Have the boiling water ready in a deep saucepan, add the salt, slowly drop in the rice, and allow it to boil rapidly for about 20 or 30 minutes, or until a grain when pressed between the thumb and finger is entirely soft. In order to prevent it from sticking to the pan, lift it if necessary from time to time with a fork, but do not stir it, for stirring is likely to break the grains. When sufficiently cooked, turn the rice into a colander or sieve, and after the water has drained off cover with a cloth and set over a pan of hot water on the back of the stove or in the oven; or turn the rice into a shallow pan, cover with a lid, and place it in a warm oven for a short time. Treated in this way the grains swell and are kept separate.

If a large kettle is not at hand, rice may also be cooked successfully in a smaller open saucepan or kettle, allowing eight times as much water as rice, or 2 quarts of water to 1 cup of rice. The same method is used as with the large proportion of water, but the rice requires more careful watching. If the starchy liquid surrounding the grains is washed off by pouring hot water through the colander in which the cooked rice is draining, each grain will be left separate and distinct. This is not usually necessary when the larger proportion of water is used.

The water drained from the rice after cooking should not be thrown away, as it contains much starch. It can be used for thickening in soups, stews, baked dishes, with or without milk, or, if boiled down, for starching fine sheer materials.

If boiled too long, rice becomes sticky and the grains tend to break apart. Many persons make the mistake of overcooking rice and also of not salting it enough, and because of this it has been unpopular as a vegetable in many households. It should be cooked only until a grain when pressed between the thumb and forefinger is soft and there is no hard, uncooked portion in the center. The rice should

then be immediately removed from the fire, drained, and dried in one of the ways described.

Some persons prefer to cook rice in a double boiler with an even smaller quantity of water. Three parts of boiling water are used to one part of rice, and a teaspoon of salt is allowed to each cup of rice. The rice is dropped into the hot salted water, the boiler is covered, and the rice is cooked for about 30 minutes. Then the lid may be removed and the rice cooked slowly a little longer until it has dried somewhat, or it may be turned into a pan, covered with a lid, and dried in a hot oven for a few minutes.

If rice is soaked in tepid water until the grains lose their luster and become solid white, the time of cooking by any method can be reduced approximately one-half. Rice

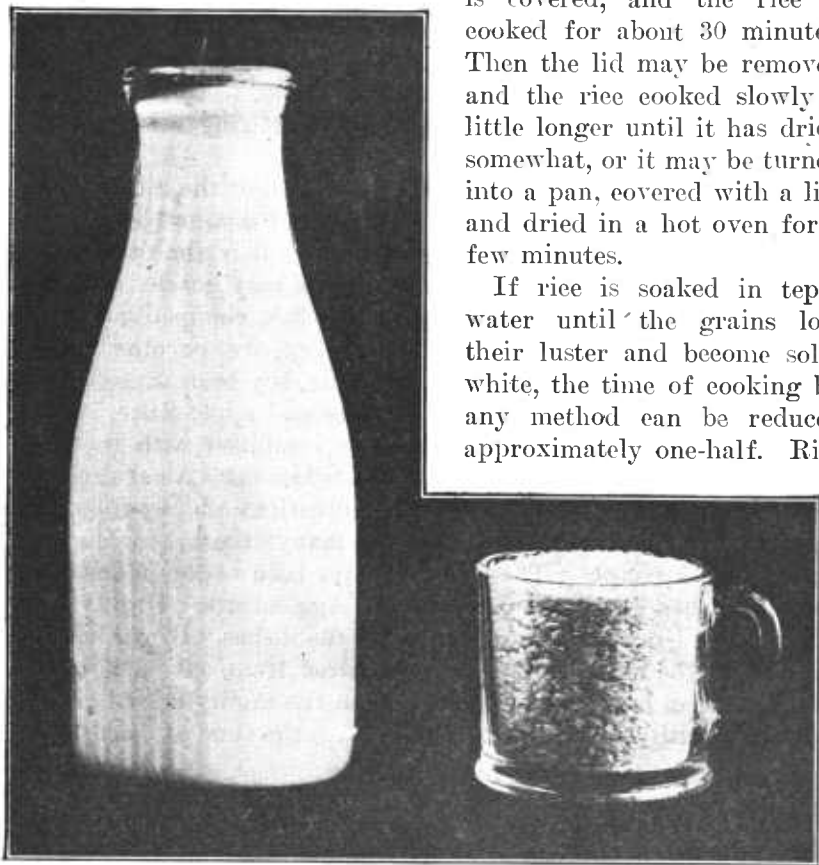


FIG. 4.—One cup of rice cooked in a double boiler will absorb a quart of milk. This makes a very nourishing food, especially suitable for children and invalids.

first washed and then soaked for 1 hour in tepid water will cook in 10 to 15 minutes in an open kettle and in about 20 minutes in a double boiler. The grains are very large and distinct if soaked and then cooked in a large quantity of water.

Rice, like all other cereals, may be cooked very satisfactorily in the fireless cooker. It should be prepared in the same way as for cooking in the double boiler, three parts of water being used to one part of rice. The rice should be dropped into the boiling water, boiled on the stove for 5 minutes, then put into the cooker for from 45 minutes to 1 hour.

Both the flavor and the food value of rice may be considerably improved by cooking it in whole or skim milk, or in half milk and half water, or by adding rich milk after it has been cooked. Rice will sometimes absorb as much as four times its volume of milk. This makes an especially nourishing food for children and invalids. Beef or chicken broth may also be absorbed by rice in the same way, making a very nourishing dish.

Because of its mild flavor and its texture, rice is especially suitable to combine with other foods of more pronounced flavor. For example, it can be used as the basis for substantial dishes to be served as meat substitutes or for nourishing soups and appetizing salads and deserts.

In countries where rice is an important item of the diet, it is commonly combined with some other local food of distinctive flavor. In Ceylon and India, for instance, the sauce for it is almost invariably flavored with curry, and the garnish dishes may consist of a dozen or more such foods as minced ham or salt fish, chopped boiled eggs, preserved ginger, horse-radish, pickled peppers, or other oriental fruits or vegetables; in Japan and China, soy-bean sauce or curd, which is not unlike some cheeses in taste and appearance, is served with rice; and in Italy it is frequently combined with the highly flavored cheeses for which that country is famous. American housewives have long used some of these combinations and from our great variety of food materials can work out many others with the aid of the following recipes. These recipes have been tested in the experimental kitchen of the Department of Agriculture. Highly milled rice was used in the preparation of all the dishes. Brown rice may be used in the same ways, but it requires from one-half to three-quarters of an hour longer cooking than the highly milled rice. As is the case with white rice, soaking reduces the time of cooking.

SOUPS.

Rice added to any kind of meat stock with a little parsley, bay leaf, or thyme, or a pinch of celery seed for seasoning makes a palatable as well as a nourishing soup. Also, rice makes excellent thickening for soups made of highly flavored vegetables, such as tomatoes, asparagus, celery, or onions.

CREAM OF CELERY OR ASPARAGUS WITH RICE.

$\frac{1}{2}$ pound celery or asparagus.	1 tablespoon chopped parsley or 1 tea-
$\frac{1}{4}$ cup rice.	spoon onion juice.
1 quart cold water.	2 teaspoons salt.
2 tablespoons butter, drippings, or	$\frac{1}{4}$ teaspoon pepper.
other fat.	1 quart milk.

Cut the celery or asparagus in half-inch pieces. Cook the rice and celery or asparagus in the water until both are tender. Press them through a colander

and add the fat, the seasoning, and the milk, and reheat. This will make 5 or 6 average servings.

RICE AND CHICKEN SOUP.

$\frac{1}{2}$ cup uncooked rice.	2 tablespoons chicken fat, butter, or other fat.
3 cups chicken broth.	$\frac{1}{4}$ teaspoon celery seed.
3 cups water or milk.	$\frac{1}{2}$ teaspoon salt.
$\frac{1}{2}$ cup minced chicken.	$\frac{1}{8}$ teaspoon pepper.

Cook the rice in the broth and the water or milk until tender. Add the minced chicken, the fat, and the seasoning. The minced chicken may be omitted if desired. This will make 5 or 6 average servings.

BAKED AND STEWED DISHES.

The baked and stewed rice dishes here given are planned with the idea of making appetizing and nourishing dishes in which small quantities of the higher-priced foods may be made to go farther than if served alone. Some of these combination dishes, such as Italian baked rice, savory rice omelette, and oysters scalloped with rice, can well be substituted for meat.

BAKED RICE AND GIBLETS.

1 cup cooked giblets.	1 teaspoon salt.
2 cups cooked rice.	$\frac{1}{4}$ teaspoon pepper.
2 cups gravy.	

Chop the giblets fine, mix them with the other ingredients, pour the mixture into a greased baking dish, and bake it for 20 minutes. A little finely chopped celery or green pepper may be added if desired. This dish will make 8 or 10 ordinary servings.

STEWED KIDNEYS AND RICE.

2 or 3 veal or lamb kidneys.	4 tablespoons butter or other fat.
1 teaspoon salt.	2 cups cooked rice.
$\frac{1}{4}$ teaspoon pepper.	1 cup water.
1 onion, chopped.	1 tablespoon flour.

Trim, split, and cook the kidneys for 10 minutes in boiling water. Cut them in small pieces, add the salt, the pepper, and the chopped onion, and sauté them in the fat until brown. Place the browned kidneys and onion in a baking dish with the cooked rice. Make a brown gravy by adding the flour and the water to the fat in which the onions and kidneys were browned and pour it over the rice and kidneys. Set the dish in a hot oven until the mixture is heated through. This will make about 8 or 10 average servings.

SAVORY RICE OMELETTE.

3 eggs.	3 tablespoons minced ham or left-over fried bacon.
$\frac{1}{2}$ cup cooked rice.	$\frac{1}{4}$ teaspoon salt.
$\frac{1}{2}$ cup milk.	$\frac{1}{8}$ teaspoon pepper.
1 tablespoon butter or other fat.	
1 teaspoon chopped parsley.	

Beat the whites and the yolks of the eggs separately. Mix all the ingredients, folding in the whites of eggs last. Pour the mixture into a hot, well-greased frying pan, and when it is brown, fold it over with a flexible-bladed knife. Turn the omelette out on a warm platter and serve immediately.

If desired, the meat may be omitted, and a little fresh sage, thyme, mint, celery, pimiento, or onion may be substituted for the parsley. This will make 5 or 6 average servings.

ITALIAN BAKED RICE.

4 cups cooked rice.	1½ cups tomato juice.
¾ cup grated cheese.	2 teaspoons salt.
½ cup chopped pimiento.	½ teaspoon pepper.

Mix the ingredients well together and pour into a baking dish. Cover the top of the dish with the pulp left from straining the tomatoes. Bake for 30 minutes in a moderate oven and serve hot. This dish will make 10 average servings.

OYSTERS SCALLOPED WITH RICE.

3 cups cooked rice.	1 cup milk.
1 pint fresh oysters.	2 tablespoons flour.
1 cup chopped celery.	½ teaspoon salt.
2 tablespoons butter, drippings, or other fat.	½ teaspoon pepper.

Place alternate layers of rice, oysters, and celery in a baking dish and pour over them a smooth white sauce made by melting the fat and stirring in the milk, the flour, the salt, and the pepper. Bake for 20 minutes. This will make 8 or 10 average servings.

BAKED STEAK STUFFED WITH RICE.

1½ or 2 pounds round or flank steak.	2 tablespoons stock or gravy.
1 onion, chopped fine.	1 cup cooked rice.
1 tablespoon fat.	1 tablespoon parsley.
2 tablespoons Worcestershire sauce.	1 tablespoon flour.

Have the steak cut rather thin, pound it well, and spread on it stuffing made in the following way: Brown the finely chopped onion in the fat, stir in the flour, the Worcestershire sauce, and the stock, and cook this mixture until it is thick; then stir in the rice and the parsley, and add salt, if necessary. After the stuffing has been spread on the steak roll it and tie it, or fasten with skewers, and bake it slowly for 1½ hours. Slice it crosswise of the roll and serve it hot. This makes 8 or 10 average servings.

Most of the rice curries in the Orient are made with a basis of plain boiled rice, to which are added other dishes combining many foods and flavors. They are usually served in a curry dish with perhaps 8 or 10 small compartments. After taking a portion of plain rice, each person chooses as few or as many of the other dishes as desired, spreads them over the rice, then covers the whole mass with curry sauce made as follows:

CURRY SAUCE.

2 tablespoons fat.	3 cloves.
2 tablespoons curry powder.	1 tablespoon grated coconut.
2 cups hot milk or water, tomato juice, or coconut milk.	Salt and cayenne.
½ lemon.	1 chopped onion.
	1 tablespoon chutney.

Melt the fat and stir in the curry powder, add the milk or water, tomato juice, or coconut milk, and cook until it is smooth and thick, then add the other ingredients and let the sauce simmer for 30 minutes.

The dish known as pilau—a combination of rice, meat broth, meat, and fat—in some rice-producing countries forms the common staple food of the people. Pilau is also a popular dish in Turkey, where it is often colored with saffron and flavored with spices or mixed with currants in a way that does not find favor with western palates. Other forms and combinations are common in the Creole cookery of the Southern States. Any kind of meat or fowl may be used.

PLAIN PILAU.

1½ pounds meat.
3 cups water.
1 teaspoon salt.

¼ teaspoon pepper.
½ cup rice.
4 tablespoons butter or other fat.

Place the meat in the cold water with the seasoning and bring it slowly to the boiling point, removing the scum that rises to the surface. Cook it just under the boiling point for 30 minutes, or until the meat is about half cooked. Pour the broth into a double boiler, add the rice, which has been washed thoroughly, and cook it until tender. The rice will absorb the broth and the grains will be unbroken. Add the fat just before removing the rice to serve. While the rice is being cooked finish cooking the meat by browning it in the oven or in an iron kettle on top of the stove. When both rice and meat are cooked pile the rice on a platter and place the meat on the rice.

BEEF WITH RICE AND VEGETABLES.

1½ or 2 pounds beef.
½ cup flour.
6 slices of bacon.
6 cups boiling water.
1 large onion.
6 cloves.
1 cup tomatoes.

3 teaspoons salt.
¼ teaspoon pepper.
1 small piece of bay leaf.
Lemon peel.
½ cup uncooked rice.
1 cup celery.
1 cup diced carrots.

Use one of the less expensive cuts of beef. Pound the flour into the meat and cut it into inch cubes. Cut the bacon into fine pieces and fry it for a few minutes in a large deep pan. In the fat thus obtained brown the beef, turning it constantly; then add the boiling water, cook the mixture for a few minutes, and turn it into a large cooking pot. Add the onion, into which the cloves have been stuck, the tomatoes, the salt, the pepper, the bay leaf, and the lemon peel. Cover the kettle and simmer this mixture for an hour; then add the rice, the celery, and the carrots, simmer for 45 minutes, and serve hot on a platter. This will make from 12 to 14 average servings and is good when reheated.

SPANISH RICE.

3 onions (medium size).
½ cup drippings.
½ cup uncooked rice.

3 cups fresh or canned tomatoes.
3 green peppers cut into strips.
2 teaspoons salt.

Slice the onions and cook until tender and slightly brown in the melted fat. Remove them from the fat, add the rice, which has been carefully washed and dried, and brown it. Then add the cooked onions, the tomatoes, the green peppers, and the salt, turn the mixture into a baking dish, and bake it until the rice and the peppers are tender. This will make 6 or 8 average servings.

STUFFED PEPPERS.

8 green peppers (average size).	2 tablespoons butter or other fat.
1 cup chopped celery.	1 teaspoon salt.
3 cups boiled rice.	$\frac{1}{4}$ cup grated cheese.
2 cups canned tomatoes.	

Cut off the stem end of the green peppers and remove the seeds. Cover the peppers with cold water, bring the water to the boiling point, and cook them for 5 minutes. Cook the celery until tender. Mix the rice, the tomatoes, the celery, the fat, and the salt, and fill the pepper cases. Stand them close together in a baking dish, sprinkle the tops with the grated cheese, and pour a little water or tomato juice in the dish to keep them moist. Bake until the cheese is brown and the pepper cases thoroughly tender.

When peppers are not plentiful, two or three may be used to flavor the whole dish. In that case, slice the peppers, cook them until tender, combine them with the other ingredients except the cheese, pour the mixture into a baking dish, sprinkle the grated cheese on top, and bake until the cheese is brown.

BAKED ONIONS AND RICE.

6 or 8 onions.	Cayenne pepper.
2 teaspoons butter or other fat.	1 cup milk.
2 tablespoons flour.	$\frac{1}{4}$ cup grated cheese.
1 teaspoon salt.	2 cups cooked rice.

Pare the onions under water and parboil them until tender, changing the water once. Make a sauce by melting the fat, adding the flour, the salt, a pinch of pepper, and the milk. Cook this mixture until it is smooth, let it cool, add the grated cheese, and bring the sauce slowly to the boiling point, stirring it constantly. Place in a baking dish alternate layers of the rice and the onions torn apart, pour on the cheese sauce, and bake for 20 minutes. This will make 6 or 8 servings.

CAKES AND BREADS.

Cooked rice or rice flour may be used in various forms of breads, cakes, and cookies. Because of the lack of gluten, rice flour alone is not suitable for making bread, but bread of good texture may be made from mixed wheat and rice flour. During the war rice flour was found to be an excellent substitute for wheat in waffles and certain kinds of cookies and cake.

RICE WAFFLES.

1 cup cooked rice.	$\frac{1}{4}$ cup sweet milk.
1 cup wheat flour.	3 eggs.
1 teaspoon salt.	1 teaspoon butter, drippings, or other fat.
$1\frac{1}{2}$ teaspoons baking powder.	

Press the rice through a coarse sieve. Sift the flour, the salt, and the baking powder together, then add the milk, the yolks of eggs, the rice, and the melted fat, and finally fold in the beaten whites of eggs. Have the waffle iron hot and well greased. This amount will fill the waffle iron four times.

This recipe may also be used for rice fritters by adding 1 tablespoon of sugar and frying in deep fat. If preferred, the grains of rice may be left whole.

RICE-FLOUR WAFFLES.

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| 1½ cups rice flour. | 1½ cups milk. |
| 1 teaspoon salt. | 3 tablespoons melted fat. |
| 3 teaspoons baking powder. | 2 eggs. |

Sift the dry ingredients together and add them slowly to the milk, beaten egg yolks, and melted fat. Fold in the stiffly beaten whites and cook the waffles in a hot, well-greased iron.

RICE SPOON BREAD.

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| ½ cup corn meal. | 2 cups sweet milk. |
| 1½ teaspoons salt. | 2 eggs. |
| 1 tablespoon sugar. | 1 cup cooked rice. |
| 2 teaspoons baking powder. | 1 tablespoon butter or other fat. |

Sift the meal, the salt, the sugar, and the baking powder together, then add the milk, the yolks of eggs (well beaten), the rice, and the melted fat. Fold in the well-beaten whites of eggs. Pour the mixture into a hot, well-greased baking dish and bake for 40 minutes. Serve the spoon bread hot. This will make 8 or 10 servings.

RICE AND CORN MUFFINS.

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| 2 cups corn meal. | 1 cup cooked rice. |
| 1 tablespoon sugar. | 2 cups sweet milk. |
| ½ teaspoon salt. | 1 egg. |
| 2½ teaspoons baking powder. | 1 tablespoon fat. |

Sift the meal, the sugar, the salt, and the baking powder together. Mix the rice, the milk, the well-beaten egg, and the melted fat; then add the meal and other dry ingredients. Bake the mixture in well-greased muffin pans. This will make 14 to 18 average muffins.

RICE-FLOUR COCONUT DROP COOKIES.

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| 2 eggs, well beaten. | ¾ teaspoon salt. |
| ¾ cup sugar. | 2 teaspoons baking powder. |
| 1 tablespoon melted fat. | 1 cup grated coconut. |
| 6 tablespoons milk. | 1 teaspoon vanilla. |
| 1½ cups rice flour. | |

Mix together the ingredients in the order given, drop the batter by the spoonful on a greased baking sheet, and bake for 15 minutes in a moderate oven.

SPONGE CAKE.

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| 3 eggs (yolks and whites beaten separately). | 2 teaspoons lemon juice. |
| ¾ cup sugar. | 1 teaspoon vanilla. |
| 1 tablespoon hot water. | ¾ cup rice flour. |
| ¼ teaspoon salt. | 1½ teaspoons baking powder. |

Combine the ingredients in the order in which they are listed and bake the cake as a loaf or in muffin pans.

This cake may be used as it is or as the basis for many desserts. Baked in a thin sheet, spread with soft jelly, and rolled, it makes a delicious jelly roll. It may also be served with a sauce like cottage pudding, or it may be baked in layers and put together with custard filling for a Martha Washington pie, or used for a shortcake with fresh fruit between the layers.

SALADS.

Cold boiled rice, if very dry and flaky, is an excellent basis for many salads and may be the means of using left-overs of vegetables, fruits, meat, or fish. For instance, left-over peas, carrots, green beans, or fresh tomatoes may be combined with left-over rice, and small amounts of fresh fruits may be used in the same way. Grapefruit makes a delicious salad served with rice and French dressing. Also plain, cold boiled rice or cold pressed rice may be served with lettuce with a hot or cold cheese dressing or with mayonnaise, either of which adds greatly to the nutritive value of the dish as well as gives it a distinctive flavor. The texture of rice is such that it readily takes up the flavor of any dressing.

CHEESE DRESSING.

2 teaspoons butter or other fat.	1½ cups milk.
2 tablespoons flour.	¾ cup grated cheese.
1 teaspoon salt.	2 tablespoons lemon juice.
½ teaspoon cayenne pepper.	

Melt the fat; add the flour, the salt, the pepper, and the milk. Cook the mixture slowly until it is smooth, then let it cool. Add the grated cheese, bring the mixture slowly to the boiling point, stirring it constantly, and add the lemon juice. Serve the dressing either hot or cold.

RICE COMBINATION SALAD.

1½ cups cooked rice.	4 tablespoons chopped celery.
4 tablespoons chopped pimiento.	4 tablespoons green peppers or olives.
3 tablespoons grated cheese.	Salt.

Combine the ingredients and serve on lettuce with French dressing, or mayonnaise, or cheese dressing. If the cheese dressing is used, omit the cheese in the salad.

RICE AND ONION SALAD.

1 cup cooked rice.	3 young onions, chopped fine.
1 teaspoon chopped parsley.	

Combine the ingredients and serve on lettuce with cheese sauce, French dressing, or mayonnaise.

RICE AND TOMATO SALAD.

Scald, peel, and chill small ripe tomatoes. Cut a cone-shaped piece from the stem end of each and with a silver fork carefully work in salt and pepper for seasoning; or remove the inside of the tomato and stuff the shell with chopped celery, green peppers, and nuts, mixed with salad dressing. Arrange the tomatoes on a bed of lettuce and cold rice and serve with boiled or mayonnaise dressing.

TUNA FISH OR SALMON SALAD WITH RICE.

Remove the bones and skin from a can of salmon or tuna fish and mince it finely. Add an equal quantity of cold boiled rice, and season the mixture with salt, pepper, and vinegar. Stir in enough boiled salad dressing to moisten it

and set it away for a while in a cool place. When ready to serve add a little crisp celery finely cut, and shape the salad in molds moistened with cold water. Turn them out on a bed of lettuce leaves and, if desired, garnish with stuffed olives cut lengthwise.

DESSERTS.

The use of rice in combination with sugar, milk, cream, and eggs as desserts is far more generally known in the United States than ways of combining it with meat or making it into meat-substitute dishes. Yet even the variety in dessert dishes may be considerably increased. All rice dishes made with considerable quantities of milk have high food value, and if not too sweet are particularly good for children and invalids. Rice molded and served with a sauce of fresh or cooked fruit, or hot boiled rice served with maple sirup or sugar, or ordinary sugar mixed with cinnamon, also makes a wholesome dessert.

OLD-FASHIONED CREAMY RICE PUDDING.

1 tablespoon uncooked rice.	½ teaspoon nutmeg or cinnamon.
1 quart milk.	1 teaspoon salt.
½ cup sugar.	

Wash the rice, add the other ingredients, pour the mixture into a good-sized baking dish, and cook in the oven slowly for about 2 or 3 hours, stirring it frequently. If allowed to cook slowly, the milk thickens to a creamy consistency and the rice swells to several times its original size. If double the quantity of rice is used, the mixture does not require such long cooking, as the rice in swelling thickens the liquid more rapidly, but the product is not so creamy. Often a half cup of raisins is added to the pudding and allowed to cook down with the milk.

RICE BAVARIAN CREAM.

½ cup uncooked rice.	Nutmeg or cinnamon.
½ cup sugar.	Whites of 2 eggs.
4 cups milk.	1 teaspoon salt.
1 tablespoon granulated gelatin dissolved in 4 tablespoons cold water.	½ teaspoon vanilla.

Wash the rice and cook it with the sugar, the salt, and the milk until soft and thick, stirring it frequently. Soak the gelatin in the cold water, stir it into the hot rice mixture, add the spice, and let the mixture cool. When nearly set, fold in the whites of eggs beaten stiff, stir in the vanilla, and turn the mixture into molds. Serve with whipped cream or with a custard sauce, dotted with tart jelly. This will make 8 or 10 servings.

CHOCOLATE RICE PUDDING.

2 cups milk.	½ teaspoon vanilla.
1½ squares chocolate.	1 tablespoon cornstarch.
½ teaspoon salt.	2 cups cooked rice.
½ cup sugar.	

Heat the milk, the chocolate, the salt, the sugar, and the vanilla together until the chocolate is melted and well blended with the other ingredients. Moisten

the cornstarch and stir it into the mixture, add the rice, pour the mixture into a baking dish, and bake it for 20 minutes. This will make 8 or 10 average servings.

RICE AND TART APPLE PUDDING.

6 medium-sized tart apples.
1 cup granulated sugar.
 $\frac{1}{2}$ lemon or orange rind.
Raisins.

2 cups boiled rice.
2 tablespoons butter or other fat.
 $\frac{1}{4}$ teaspoon cinnamon.
2 tablespoons sugar.

Pare and core the apples, place them in a saucepan, cover them with water, and add 1 cup of sugar and the lemon or orange rind. Cook the apples slowly until they are nearly tender, remove them from the sirup, and fill the centers with chopped raisins. Put the rice in a baking dish and place the stuffed apples on the top of the rice. Boil the sirup until it is reduced one-half, add the fat just before removing it from the stove, and pour the sirup over the apples and rice. Sprinkle the cinnamon and the remaining sugar over the top and bake the pudding for 20 minutes. Serve the pudding either hot or cold with sauce or cream. This serves six persons.

RICE AND FRUIT COMPOTES.

Rice and fruit compotes are usually made with molded rice. To mold rice it should be cooked about 10 minutes longer than for ordinary cooked rice. Pour it into molds, place weights over the top, and chill it. Serve it with fresh sugared fruit or cooked fruits, or, if desired, dried fruits, such as raisins, may be cooked with the rice and the molds served with soft custard.

GENERAL HINTS ON THE USES OF RICE LEFT-OVERS.

Water from cooked rice may be used in soups, for the liquid in scalloped dishes, or for starching sheer materials.

Cold rice, or rice reheated by steaming, may be used as a breakfast dish with sugar and cream, with stewed fruits, or with baked or coddled apples.

Rice reheated by steaming may be served on a platter surrounded with carrots and peas, or turned over in browned butter or other fat and served as a vegetable.

Rice may be combined with vegetables and served cold with cheese sauce or mayonnaise as a salad.

Rice may be used for thickening soups, or in scalloped dishes instead of bread crumbs, or combined with chopped meat and seasoned with onion, parsley, or celery seed and made into croquettes.

Rice mixed with a little chopped meat and green pepper or celery makes a good stuffing for tomatoes or baked fish, or to place between two steaks of fish for baking.

The tougher cuts of meat may be combined in stews with left-over rice.

Rice may be recooked in milk, and a little butter or other fat and sugar added. This makes a particularly nourishing dish for children or invalids.

Rice scalloped with white sauce in which chopped or grated cheese has been melted, makes a substantial and appetizing dish suitable for luncheon or supper.

WILD RICE.

In various parts of this continent, especially in the north-central United States and south-central Canada, the plant sometimes called wild rice, but also known as Indian rice and Canada rice, is common along the edges of ponds and streams. It is not a true rice but belongs to a different botanical group, as is indicated by its scientific name, *Zizania aquatica*.

In early times wild rice was one of the staple foods of certain tribes of American Indians, ranking next to Indian corn in importance. They gathered it by paddling among the reedlike plants and shaking the ripe grains into the canoe. The grains are longer and less rounded than those of true rice and the husk is somewhat dark in color. The Indian women parch the rice in kettles over an open fire, and the heat not only improves the flavor and keeping quality of the grain, but also makes the rough husk easier to remove. The parched grain is tossed from birch-bark baskets to winnow out the chaff, but small portions of the hulls cling to the grains, and give them and the food prepared from them a grayish color.

The Indians generally boil wild rice or make it into soups and stews with such foods as fish or game, though they occasionally grind it and make it into thin cakes. In some localities wild rice was also a common food among early settlers and traders, who learned from the Indians how to prepare it. It is much esteemed by sportsmen, and has been introduced by them into clubs and private families, and occasionally appears on restaurant menus. In such establishments it is most frequently used as a vegetable, especially with game, but it is also served as a breakfast cereal.

Samples of wild rice analyzed in the Office of Home Economics show that its general food value is much like that of other cereals, perhaps resembling wheat most closely. It contains rather more protein, fat, and ash than true rice, and proportionately less carbohydrates, but these differences are not pronounced. There is no reason to suppose that it is either more or less digestible than other cereals. A serious objection to growing it as a cultivated crop is that the grains shatter easily.

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- Principles of Nutrition and Nutritive Value of Food. (Farmers' Bulletin 142.)
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Cheese and Its Economical Uses in the Diet. (Farmers' Bulletin 487.)
Sugar and Its Value as Food. (Farmers' Bulletin 535.)
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